

## REMARKS

### **Summary**

All pending claims 1-3 were rejected in the present Office Action. Claims 1-2 have been amended for language and grammatical clarity, while Claims 4-11 are newly added. A number of paragraphs of the specification have also been amended to fix typographical and grammatical errors, in addition to re-wording awkward sentences. These amendments do not add new matter, and are unrelated to patentability.

While the amendments should help to clarify the teachings of the application, Applicants respectfully suggest that the Examiner review the reference included in the IDS filed with this application for a better understanding of the principles of the disclosure as applied to a one-directional force feedback device. This reference is U.S. Patent No. 6,859,003 to Hayasaka. The Applicants respectfully submit that the amendments place the application in condition for allowance.

### **Claim Rejections**

#### **35 U.S.C. § 102(e)**

Claims 1-3 were rejected under 35 U.S.C. § 102(e) as being anticipated by Numata et al. [U.S. Patent No. 6,987,508 B2] ("Numata"). The Applicants respectfully submit that Numata does not anticipate Claims 1-11 because it fails to teach each and every element of the claims.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP § 2131. Not only must the prior art reference describe each and every element, but "the elements must be arranged as required by the claim." *Id.*

Claim 1 requires that certain actions be taken by the control section up to and after a "predetermined operation amount" is reached, either in an increasing operational direction or in a returning operational direction of the operation section, for example. In

contrast, Numata fails to teach a “predetermined operation amount,” only referring to “detecting means which detects an operating condition of the knob.” Col. 3, l. 6.

Numata teaches that external signals or control information is analyzed by CPU 9a according to data and programs stored in memory 8b to determine a control signal that drives actuator 10. Col. 7, ll. 57-67. Detecting means may also track the amount and position of drive of actuators 6A and 6B, col. 12, ll. 20-40, but the result of changes in force applied by the actuators 6A and 6B is to change the operational feeling given to the knob 3, such as a feeling pattern FP1A, FP2A, FP1B or FP2B. Col. 13, ll. 1-6.

These feeling patterns correspond to discs such as 12A, 13A, 12B, and 13B having varying depression patterns. Col. 12, ll. 20-33. These feeling patterns, therefore, provide discrete changes in the feeling sensation that correspond to, for instance, a change in radio stations (Fig. 12) to accurately feel whether the station is foreign or domestic. Col. 18, ll. 3-10. While the embodiments of Numata vary widely, the result is the same: the manual input devices provide tactile feel for discrete events, for example, for an automobile driver “to tactilely perceive a gear shift when he/she shifts the knob from position 1 to another position” in an automobile’s transmission. Col. 15, ll. 4-24.

As will be further explained, the trigger of a “predetermined operational amount” to a joystick operation section as required by Claim 1 causes a smooth transition between joystick movement operations, including stopping and starting. Often, a joystick operation section movement to one location is only temporary, but there is at least some pause in time wherein the operation section is held in place. The smooth transition prevents oscillation of the operation section so that it can be held stable during these pauses, or after an operation. See, for instance, application at page 22, ll. 12-22.

More precisely, Claim 1 recites:

an external force is repeatedly computed to be applied to the operation section when a predetermined operation amount is reached, wherein the computed external force comprises a resultant having a first component applied in a direction opposite to the operation direction of the operation section prior to changing the operation direction and a second component applied in a direction opposite to the operation direction of the operation section after changing the operation direction, the first component being gradually reduced and the second component being gradually increased

with an increase in the operation amount of the operation section after changing the operation direction.

Nowhere in Numata does it teach this limitation. Specifically, Numata does not teach that an external force has two components corresponding to two-dimensional movement, and that during a transition operation (e.g., when the operation direction of the operation section is changed during operation), the "external force is repeatedly computed to be applied to the operation section when a predetermined operation amount is reached." The section cited to in the Office Action is in relation to a radio tuner knob, which can only be turned in one direction at a time, and therefore moves in a single dimension. In contrast, a joystick operation section may be directed in two-dimensional space and have a resultant force vector corresponding to any direction in that space.

Furthermore, nowhere in Numata does it teach "the first component being gradually reduced and the second component being gradually increased with an increase in the operation amount of the operation section after changing the operation direction." This gradual change of direction and amount of the external force through repeated computations is not found in Numata, which focuses on changing amongst discrete feeling patterns.

For at least these reasons, Numata does not teach each and every element of claim 1, as arranged, and thus fails to anticipate claim 1. Furthermore, Numata fails to anticipate claims 2-3 by virtue of their dependency from claim 1.

Claim 4 is likewise patentable over Numata. Support for the additional structural limitations can be found in the application at least at pages 12 through 14. While the scope of claim 4 has changed slightly, claim 4 still recites:

a direction and amount of application of the external force is repeatedly computed, and comprises a resultant having a first component applied in a direction opposite to the operation direction of the operation section prior to changing the operation direction and a second component applied in a direction opposite to the operation direction of the operation section after changing the operation direction, the first component being gradually reduced and the second component being gradually increased with an increase in the operation amount of the operation section after changing the operation direction.

This language is still very similar to that quoted earlier from claim 1, and is not disclosed in Numata. For instance, Numata does not teach that an external force has two components, and that during a transition operation, the “direction and amount of application of the external force is repeatedly computed . . . , the first component being gradually reduced and the second component being gradually increased with an increase in the operation amount of the operation section.” Again, the control section of claim 4 allows for a smooth transition between changes in direction in two-dimensional space germane to the space in which a joystick operation section operates.

Numata focuses on single dimensional movement, except for with reference to Fig. 6, a joystick type device. However, even the device of Fig. 6 includes the feeling patterns defined through discs against which the actuators are biased. Thus, if the control passes a signal to change the feeling pattern, the change is a discrete one as opposed to a gradual one.

In contrast, Claim 4 recites:

- a joystick operation section connected to a first end of a tilting lever, the tilting lever operably connected to a holding shaft;
- a swing arm positioned about a second end of the tilting lever to define directions of rotation of the tilting lever;
- a first actuator operably connected to the holding shaft;
- a second actuator operably connected to the swing arm, the first and second actuators to apply an external force to the operation section.

The structure of claim 4 further emphasizes that two-dimensional control is enabled, and that use of a tilting lever in conjunction with a swing arm, each connected to an actuator, facilitates a smooth transition of resistive force on the operation section when changing direction during operation. Numata does not teach a gradual shifting of opposing external force from one direction to another, which would be at odds with the structure therein taught, as discussed above. Numata does not teach a “swing arm,” for instance, but feeling patterns on one or more discs.

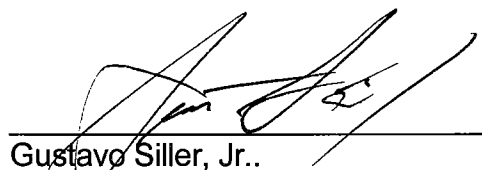
For at least these reasons, Numata does not teach each and every element of claim 4, as arranged, and thus fails to anticipate claim 4. Furthermore, Numata fails to anticipate claims 5-11 by virtue of their dependency from claim 1.

**Conclusion**

Claims 1-2 have been amended for language and grammatical clarity, while Claims 4-11 are newly added. A number of paragraphs of the specification have also been amended to fix typographical and grammatical errors, in addition to re-wording awkward sentences.

The Applicant respectfully submits that the application is in condition for allowance. The Examiner is respectfully requested to contact the undersigned in the event that a telephone interview would expedite consideration of the application.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Gustavo Siller, Jr.', is written over a horizontal line.

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